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		U.S.	PATENTS A	AND PATENT PUBLICATIONS	
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KRD	1.	US-5,990,531		Taskar et al.	11-23-1999
	2.	US-5,389,571		Takeuchi et al.	02-14-1995
	3.	US-2003/0145784	T	Thompson et al.	08-07-2003
Ψ	4.	US-2002/0079508	-	Yoshida	06-27-2002
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	FOREIGN PATENT DOCUMENTS						
Examiner Cite No. Initials*	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document	Т	
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		OTHER NON PATENT LITERATURE DOCUMENTS	
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KBD	5.	International Search Report corresponding to PCT/US2005/004039, mailed June 30, 2005.	
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	U.S. PATENTS AND PATENT PUBLICATIONS							
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KBD	1.	US-2001/0040246		Ishii	11-15-2001			
	 							
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	FOREIGN PATENT DOCUMENTS							
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KBD	2.	Beaumont, B. et al., "Epitaxial Lateral Overgrowth of GaN," Phys. Stat. Sol. (b) 227, No. 1, pp. 1-43 (2001).	

Examiner Signature	That I mon	Date Considered	4/5/2006
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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Examiner Initials*	Cite No.	U.S. Patent D	ocument	AND PATENT PUBLICATIONS Name of Patentee or Applicant of Cited	Data of D. L.E. III
KBD	1. 2. 3.	Number US-6,150,680 US-6,086,673 US-5,686,737	Kind Code (if known)	Eastman et al. Molnar	Date of Publication of Cited Document MM-DD-YYYY 11-21-2000 07-11-2000
	4. 5. 6. 7. 8.	US-4,755,867 US-2004/0241970 US-2003/0123829 US-2002/0167023 US-2002/0008241	A1 A1 A1 A1	Allen Cheng Ring Taylor Charvarkar et al. Edmond et al.	11-11-1997 07-05-1988 12-02-2004 07-03-2003 11-14-2002 01-24-2002

Examiner	I Cas M		F0	REIGN PAT	ENT DOCUMENTS		
Initials*	Cite No.		Foreign Patent Doc	ument	Name of Patentee or Applicant of	Date of Publication	T -
KBD		Office	Number	Kind Code (if known)	Cited Document	of Cited Document MM-DD-YYYY	
	9.	EP JP	0 334 006 2004-342810	A1	Siemens AG Fujitsu Ltd.	09-27-1989	
<u> </u>	11.	JP PCT	11261053 WO 04/008495		Furukawa Elecric Co. Ltd. Cree, Inc.	12-02-2004 09-24-1999	Abstrac Abstrac
					5.55, W.O.	01-22-2004	
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		OTHER NOW BATTON	
Examiner	Cite No.	OTHER NON PATENT LITERATURE DOCUMENTS	
Initials*	Cite No.	journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, gibt and consumer.	Т
KBD	13.	Third of di., 10-vv/iiiii Algan-Gan HEET With a Field Mediate.	
	14.	Chang et al., "AlGaN/GaN Modulation-Doned Field Effect Territion	
	15.	Chini et al., "Power and Linearity Characteristics 45".	
	16.	HEMTs," IEEE Electron Device Letters, 25(5), pp. 229-231 (May 2004).	
	7-	33:775-778 (1994).	
	17.	Coffie et al., "Unpassivated p-GaN/AlGaN/GaN HEMTs with 7.1 W/MMF at 10 GHz, Electronic Letters online No. 20030872, 39(19), (September 18, 2003).	
	18.	Gaska et al., "Self-Heating in High-Power Algabia (1997)	
V	19.	19(3), pp. 89-91 (March 1998). Hikita et al., "350V/150A AlGaN/GaN Power HFET on Silicon Substrate With Source-via Grouding (SVG) Structure," <i>Electron Devices Meeting</i> , 2004, pp. 803-806, IEDM Technical Digest. IEEE International (Dec. 2004).	 -

Examiner Signature	7/10		
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; ;		Nitride," Journal of Applied Physics, 96(8), pp. 4483-4489 (Oct. 15, 2004).	
, i	21.	Konseyura ed al. 184 dog Mallich Coin AlCanicani LEMT Days Anglish and Conductive N. C.O.	
,		Kanamura et al., "A 100-W High-Gain AlGaN/GaN HEMT Power Amplifier on a Conductive N-SiC	
		Substrate for Wireless Base Station Applications," Electron Devices Meeting, 2004, pp. 799-802,	
		IEDM Technical Digest. IEEE International (Dec. 2004).	
	22.	Karmalkar et al., "Very High Voltage AlGaN/GaN High Electron Mobility Transistors Using a Field	
		Plate Deposited on a Stepped Insulator," Solid State Electronics, Vol. 45, pp. 1645-52 (2001).	
	23.	Kashahara et al., "Ka-ban 2.3W Power AlGaN/GaN Heterojunction FET," IEDM Technical Digest,	
		pp. 677-680 (2002).	
	24.	Komiak et al., "Fully Monolithic 4 Watt High Efficiency Ka-band Power Amplifier," IEEE MTT-S	
		International Microwave Symposium Digest, Vol. 3, pp. 947-950 (1999).	
	25.	Küsters et al., "Double-Heterojunction Lattice-Matched and Pseudomorphic InGaAs HEMT with δ-	
1 1		Doped InP Supply Layers and p-InP Barier Enhancement Layer Grown by LP-MOVPE," IEEE	
1		Electron Device Letters, 14(1), (January 1993).	
	26.	Manfra et al., "Electron Mobility Exceeding 160 000 cm²/V s in AlGaN/GaN Heterostructures Grown	
		by Molecular-beam Epitaxy," Applied Physics Letters, 85(22), pp. 5394-96 (Nov. 29, 2004).	
	27.	Manfra et al., "High Mobility AlGaN/GaN Heterostructures Grown by Plasma-assisted Molecular	
1 1	21.	beam epitaxy on Semi-Insulating GaN Templates Prepared by Hydride Vapor Phase Epitaxy,"	
<u> </u>		Journal of Applied Physics, 92(1), pp. 338-345 (July 1, 2002).	
	28.	Manfra et al., "High-Mobility AlGaN/GaN Heterostructures Grown by Molecular-beam Epitaxy on	
	20.	Gan Templates Prepared by Hydride Vapor Phase Epitaxy," <i>Applied Physics Letters</i> , 77(18), pp.	
1		2888-2890 (Oct. 30, 2000).	
	29.	Parikh et al., "Development of Gallium Nitride Epitaxy and Associated Material-Device Correlation	
1 1		for RF, Microwave and MM-wave Applications," Cree, Inc. (35 slides).	
	30.	Saxler et al., "III-Nitride Heterostructures on High-Purity Semi-Insulating 4H-SiC Substrates for	
		High-Power RF Transistors," International Workshop on Nitride Semiconductors (July 19, 2004).	
	31.	Shiojima et al., "Improved Carrier Confinement by a Buried p-Layer in the AlGaN/GaN HEMT	
1 1	•	Structure," IEICE Trans. Electron., E83-C(12), (December 2000).	
	32.	"Thick AIN template on SiC substrate - Novel semi insulating substrate for GaN-based devices," ©	
l i	CL.	2003 by TDI, Inc., http://www.tdii.com/products/AIN_SiCT.html.	
	33.	Tilak et al., "Influence of Barrier Thickness on the High-Power Performance of AlGaN/GaN HEMTs,"	
1 1		IEEE Electron Device Letters, 22(11), pp. 504-506 (Nov. 2001).	
	34.	United States Patent Application entitled "Improved Dielectric Passivation for Semiconductor	
1 1	· · ·	Devices," Serial No. 10/851,507, filed May 22, 2004 (Cree Docket No. P0274).	
	35.	United States Patent Application entitled "Silicon Carbide on Diamond Substrates and Related	
1 1		Devices and Methods," Serial No. 10/707,898, filed January 22, 2004 (Cree Docket No. P0387).	ļ
	36.	United States Patent Application entitled "Methods of Fabricating Nitride-Based Transistors with a	_
į į		Cap Layer and a Recessed Gate," Serial No. 10/897,726, filed July 23, 2004 (Attorney Docket No.	
		5308-392).	
	37.	United States Patent Application entitled "High Power Density and/or Linearity Transistors," Serial	
·		No. 11/005,107, filed December 6, 2004 (Attorney Docket No. 5308-511).	
	38.	United States Patent Application entitled "Field Effect Transistors (FETS) Having Multi-Watt Output	
	V.	Power at Millimeter-Wave Frequencies," Serial No. 11/005,423, filed December 6, 2004	
		(Attorney Docket No. 5308-512).	
	39.	United States Patent Application entitled "Group III Nitride Field Effect Transistors (FETs) Capable	
		of Withstanding High Temperature Reverse Bias Test Conditions," Serial No. 11/080,905, filed	
1 1		March 15, 2005 (Attorney Docket No. 5308-516).	
	40.	United States Patent Application entitled "Aluminum Free Group III-Nitride Based High Electron	
1 1		Mobility Transistors and Methods of Fabricating Same," Serial No. 11/118,575, filed April 29, 2005	
- {		(Attorney Docket No. 5308-543).	
1/	41.	United States Patent Application entitled "Binary Group III-Nitride Based High Electron Mobility	
V	• • •	Transistors and Methods of Fabricating Same," Serial No. 11/118,675, filed April 29, 2005 (Attorney	
		Docket No. 5308-544).	

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Substitute form 1449A/PTO		C	Complete if Known			
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		OTHER NON PATENT LITERATURE DOCUMENTS	
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KED	42.	United States Patent Application entitled "Composite Substrates of Conductive And Insulating or Semi-Insulating Group III-Nitrides For Group III-Nitride Devices," Serial No. 11/103,127, filed April 11, 2005 (Attorney Docket No. 5308-551).	
	43.	United States Patent Application entitled "Thick Semi-Insulating or Insulating Epitaxial Gallium Nitride Layers and Devices Incorporating Same," Serial No. 11/103,117, filed April 11, 2005 (Attorney Docket No. 5308-553).	
	44.	United States Patent Application entitled "Cap Layers and/or Passivation Layers for Nitride-Based Transistors, Transistor Structures and Methods of Fabricating Same," Serial No. 10/996,249, filed November 23, 2004 (Attorney Docket No. 5308-373).	
	45.	Walker, J. L. B. (Ed.), High Power GaAs FET Amplifiers, Norwood, MA: Artech House, pp. 119-120 (1993).	
	46.	Wu et al., "3.5-Watt AlGaN/GaN HEMTs and Amplifiers at 35 GHz," IEDM-2003, Cree, Inc.	
	47.	Wu et al., "3.5-Watt AlGaN/GaN HEMTs and Amplifiers at 35 GHz," Cree Santa Barbara Technology Center, Goleta, CA 93117.	
	48.	Wu et al., "30-W/mm GaN HEMTs by Field Plate Optimization," IEEE Electron Device Letters, 25(3), pp. 117-119 (March 2004).	
	49.	Wu et al., "Bias-dependent Performance of High-Power AlGaN/GaN HEMTs," IEDM Technical Digest, p. 378-380 (2001).	
	50.	Wu et al., "Linearity Performance of GaN HEMTs With Field Plates," DRC 2004, Cree, Inc.	
	51.	Wu et al., "Linearity Performance of GaN HEMTs With Field Plates," Cree Santa Barbara Technology Center, Goleta, CA 93117.	
	52.	Yu et al., "Schottky Barrier Engineering in III-V Nitrides via the Piezoelectric Effect," Applied Physics Letters, 73(13), pp. 1880-1882 (Sept. 28, 1998).	
Ý	53.	Zhang et al., "High Breakdown GaN HEMT with Overlapping Gate Structure," IEEE Electron Device Letters, 21(9), pp. 421-423 (September 2000).	

Examiner Signature	7/17	Date Considered	4/5/2000
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		U.S	. PATENTS	AND PATENT PUBLICATIONS	
Examiner Initials*	Cite No.	U.S. Patent Do	Kind Code (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document · MM-DD-YYYY
KBD	1.	US-5,534,462		Fiordalice et al.	07-09-1996
	2.	US-5,700,714		Ogilhara et al.	12-23-1997
	3.	US-5,804,482		Konstantinov et al.	09-08-1998
	4.	US-2002/0119610		Nishii et al.	08-29-2002
	5.	US-6,492,669		Nakayama et al.	12-10-2002
	· 6.	US-2003/0017683		Emrick et al.	01-23-2003
	7.	US-2003/0157776		Smith	08-21-2003
	8.	US-2003/0213975		Hirose et al.	11-20-2003
Ψ	9.	US-2004/0004223		Nagahama et al.	01-08-2004
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	FOREIGN PATENT DOCUMENTS							
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	U.S. PATENTS AND PATENT PUBLICATIONS							
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	FOREIGN PATENT DOCUMENTS							
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KBP	1.	Ambacher et al., "Two Dimensional Electron Gases Induced by Spontaneous and Piezoelectric Polarization Charges in N- and Ga-face AlGaN/GaN Heterostructures," <i>Journal of Applied Physics</i> . Vol. 85, No. 6, pp. 3222-3233 (March 1999).	
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Examiner	Cite No.	U.S. Patent Document		Name of Patentee or Applicant of Cited	Date of Publication of Cited	
Initials*		Number	Kind Code (if known)	Document	Document MM-DD-YYYY	
KBD	1.	Re. 34,861		Davis et al.	02-14-1995	
	2.	6,639,255		Inque et al.	10-28-2003	
	3.	6,586,781		Wu et al.	07-01-2003	
	4.	6,548,333		Smith	04-15-2003	
	5.	6,515,316		Wojtowicz et al.	02-04-2003	
	6.	6,448,648	B1	Boos	09-10-2002	
	7.	6,429,467		Ando	08-06-2002	
	8.	6,316,793		Sheppard	11-13-2001	
	9.	6,218,680	B1	Carter, Jr. et al.	04-17-2001	
	10.	6,177,685	B1	Teraguchi et al.	01-23-2001	
	11.	6,064,082		Kawai et al.	05-16-2000	
	12.	6,046,464		Schetzina	04-04-2000	
	13.	6,028,328		Riechert et al.	02-22-2000	
	14.	5,946,547		Kim et al.	08-31-1999	
İ	15.	5,885,860		Weitzel et al.	03-23-1999	
	16.	5,705,827		Baba et al.	01-06-1998	
	17.	5,701,019		Matsumoto et al.	12-23-1997	
	18.	5,523-589		Edmond et al.	06-04-1996	
	19.	5,393,993		Edmond et al.	02-28-1995	
	20.	5,298,445		Asano	03-29-1994	
	21.	5,296,395		Khan et al.	03-22-1994	
	22.	5,292,501		Degenhardt et al.	03-08-1994	
	23.	5,210,051		Carter, Jr.	05-11-1993	
	24.	5,200,022		Kong et al.	04-06-1993	
	25.	5,192,987		Khan et al.	03-09-1993	
	26.	5,172,197		Nguyen et al.	12-15-1992	
	27.	5,053,348	1	Mishra et al.	10-01-1991	
	28.	4,946,547		Palmour et al.	08-07-1990	
	29.	4,788,156		Stoneham et al.	11-29-1988	
	30.	4,727,403		Hilda et al.	02-23-1988	
	31.	4,471,366		Delagebeaudeuf et al.	09-11-1984	
	32.	4,424,525		Mimura	01-03-1984	
	33.	2004/0061129	A1	Saxler et al.	04-01-2004	
	34.	2004/0029330	A1	Hussain et al.	02-12-2004	
	35.	2004/0021152	A1	Nguyen et al.	02-05-2004	
	36.	2003/0102482	A1	Saxler	06-05-2003	
	37.	2003/0020092	A1	Parikh et al.	01-31-2003	
	38.	2002/0167023	A1	Chavarkar et al.	11-14-2002	
	39.	2002/0066908	A1	Smith	06-06-2002	
	40.	2002/0017696	A1	Nakayama et al.	02-14-2002	
	41.	2001/0023964	A1	Wu et al.	09-27-2001	
J	42.	2001/0020700	A1	Inoue et al.	09-13-2001	
T T	43.	2001/0015446	A1	Inoue et al.	08-23-2001	

Examiner Signature	When to Three	Date Considered	4/5/2006

Substitute form 1449A/PTO · · ·				Complete if Known		
				Application Number	10/849,617	
INFOR	MATION D	ISCLOSUF	RE	Filing Date	May 20, 2004	
STATEMENT BY APPLICANT)T	First Named Inventor	Saxler	
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Sheet	A2	of	A3	Attorney Docket Number	5308-392	

-				FOREIGN F	PATENT DOCUMENTS		
Examiner Initials*	Cite No.	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document	T
		Office	e Number	Kind Code (if known)	Document	MM-DD-YYYY	
KBP	44.	PCT	WO 03/049193	A1	Cree, Inc.	06-12-2003	
	45.	JP	2002016087	Α	NEC Corp	01-18-2002	Abstract
	46.	JP	2001230407	Α	Matsushita Electric Industrial Co. Ltd.	08-24-2001	Abstract
	47.	PCT	WO 01/57929	A1	Cree Lighting Company	08-09-2001	
	48.	JP	10-050982	1	Nippon Telegraph & Telephone Corp.	02-20-1998	Abstract
/	49.	PCT	WO 93/23877	A1	Massachusetts Institute of Technology	11-25-1993	
	50.	EP	0 563 847	A2	Matsushita Electric Industrial Co., Ltd.	10-06-1993	

		OTHER NON PATENT LITERATURE DOCUMENTS Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal,					
Examiner nitials*	No. serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published						
KBD	51.	14, pp. 1230-1231 (1997).					
	52.	Channels," Journal of Applied Physics. Vol. 95, No. 4, pp. 2073-2078 (2004).					
	Breitschadel et al. "Minimization of Leakage Current of Recessed Gate AlGaN/GaN HEMTs by Optimizing the Dry-Etching Process," <i>Journal of Electronic Materials</i> . Vol. 28, No. 12, pp. 1420-1423 (1999).						
	54.	Burm et al. "Recessed Gate GaN MODFETS," Solid-State Electronics. Vol. 41, No. 2, pp. 247-250 (1997).					
	55.	Letters. Vol. 70, No. 4, 464-66 (1997).					
	56.	Sci. Technol. B. Vol. 17, No. 6, pp. 2755-58 (1999).					
	57.	Eastman et al. "GaN materials for high power microwave amplifiers," <i>Mat. Res. Soc. Symp. Proc.</i> Vol. 512 (1998).					
	58.	Eastman et al. "Undoped AlGaN/GaN HEMTs for Microwave Power Amplification," IEEE Transactions on Electron Devices. Vol. 48, No. 3, pp. 479-85 (March 2001).					
	59.	Egawa et al. "Recessed gate ALGaN/GaN MODFET on Sapphire Grown by MOCVD," Applied Physics Letters. Vol. 76, No. 1, pp. 121-123 (January 2000).					
	60.	Gaska et al. "High-Temperature Performance of AlGaN/GaN HFET's on SiC Substrates," IEEE Electron Device Letters. Vol. 18, No. 1, pp. 492-494 (October 1997).					
	61. Gaska et al. "Electron Transport in AlGaN/GaN Heterostructures Grown on 6H-SiC Substrates," Applied Physics Letters. Vol. 72, No. 6, pp. 707-709 (February 1998).						
	62.	Gelmont et al. "Monte Carlo simulation of electron transport in gallium nitride," <i>Journal of Applied Physics</i> . Vol. 74, No. 3, pp. 1818-1821 (August 1993).					
	63.						
	64.						
	65.	Heikman et al., "Growth of Fe-Doped Semi-insulating GaN by Metalorganic Chemical Vapor Deposition," Applied Physics Letters. Vol. 83, No. 1, pp. 439-441 (July 2002).					
	66.	Heikman, Sten J., MOCVD Growth Technologies for Applications in AlGaN/GaN High Electron Mobility Transistors, Dissertation, University of California—Santa Barbara, September 2002, 190 pages.					
	67. Karmalkar et al. "Enhancement of Breakdown Voltage in AlGaN/GaN High Electron Mobility Transistors Using a Field Plate," <i>IEEETransactions on Electron Devices</i> . Vol. 48, No. 8, pp. 1515-1: (August 2001).						
	68.	Karmalkar et al. "RESURF AlGaN/GaN HEMT for High Voltage Power Switching," IEEE Electron Device Letters. Vol. 22, No. 8, pp. 373-375 (August 2001).					
	69. Kuzmik et al. "Annealing of Schottky contacts deposited on dry etched AlGaN/Gan," Semiconductor Science and Technology. Vol. 17, No. 11 (November 2002).						
	70.	Neuburger et al. "Design of GaN-based Field Effect Transistor Structures based on Doping Screening of Polarization Fields," WA 1.5, 7 th Wide-Gandgap III-Nitride Workshop (March 2002).					
Ý	71.	Ping et al. "DC and Microwave Performance of High-Current AlGaN/GaN Heterostructure Field Effect Transistors Grown on p-Type SiC Substrates," <i>IEEE Electron Device Letters</i> . Vol. 19, No. 2, pp. 54-56 (February 1998).					

*EXAMINER: Initial if reference considered, whether option citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute form 1449A/PTO				Complete if Known		
				Application Number	10/849,617	
INFOR	MATION DI	SCLOSUR	E	Filing Date	May 20, 2004	
STATE	STATEMENT BY APPLICANT			First Named Inventor	Saxler	
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Sheet	A3	of	A3	Attorney Docket Number	5308-392	

	0::- 11:-	OTHER NON PATENT LITERATURE DOCUMENTS	т=		
Examiner nitials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	Т		
KBD	72. Sheppard et al. "High Power Demonstration at 10 GHz with GaN/AlGaN HEMT Hybrid Ampl Presented at the 58 th DRC, Denver, CO, June 2000.				
	73.	Sheppard et al. "Improved 10-GHz Operation of GaN/AlGaN HEMTs on Silicon Carbide," <i>Materials Science Forum.</i> Vols. 338-342, pp. 1643-1646, (2000).			
	74.	Shen et al., "High-Power Polarization-Engineered GaN/AlGaN/GaN HEMTs Without Surface Passivation," IEEE Electronics Device Letters. Vol. 25, No. 1, pp. 7-9 (2004).			
	75.	Sriram et al. "RF Performance of AlGaN/GaN MODFET's on High Resistivity SiC Substrates," Presentation at Materials Research Society Fall Symposium, 1997.			
	76.	Sriram et al. "SiC and GaN Wide Bandgap Microwave Power Transistors," IEEE Samoff Symposium, Pittsburgh, PA, March 18, 1998.			
	77.	Sullivan et al. "High-Power 10-GHz Operation of AlGaN HFET's on Insulating SiC," IEEE Electron Device Letters. Vol. 19, No. 6, pp. 198-200 (June 1998).			
	78.	Wu et al. "30-W/mm GaN HEMTs by Field Plate Optimization," IEEE Electron Device Letters. Vol. 25, No. 3, pp. 117-119 (March 2004).			
	79.	Wu et al. "High Al-Content AlGaN/GaN MODFET's for Ultrahigh Performance," IEEE Electron Device Letters. Vol. 19, No. 2, pp. 50-53 (February 1998).			
	80.	Yu et al. "Schottky barrier engineering in III-V nitrides via the piezoelectric effect," Applied Physics Letters. Vol 73, No. 13, pp. 1880-1882, (September 1998).	Γ		
	81.	United States Patent Application entitled "Co-Doping for Fermi Level Control in Semi-Insulating Group III Nitrides," filed January 7, 2004 (Attorney Docket No. 5308-371).			
	82.	United States Patent Application entitled "Nitride Heterojunction Transistors Having Charge-Transfer Induced Energy Barriers and Methods of Fabricating the Same," Serial No. 10/772,882, filed February 5, 2004 (Attorney Docket No. 5308-389.)			
	83.	United States Patent Application entitled "Nitride-Based Transistors with a Protective Layer and a Low-Damage Recess and Methods of Fabrication Thereof," Serial No. 10/758,871, filed January 16, 2004 (Attorney Docket No. 5308-291).			
	84.	United States Patent Application entitled "Nitride-Based Transistors and Methods of Fabrication Thereof Using Non-Etched Contact Recesses," Serial No. 10/617,843, filed July 11, 2003 (Attorney Docket No. 5308-248).			
	85.	United States Patent Application entitled "Semiconductor Devices Having a Hybrid Channel Layer, Current Aperture Transistors and Methods of Fabricating the Same," Serial No. 10/849,589, filed May 20, 2004 (Attorney Docket No. 5308-412).			
	86.	United States Patent Application entitled "Methods of Fabricating Nitride-Based Transistors with a Cap Layer and a Recessed Gate," filed July 23, 2004 (Attorney Docket No. 5308-392).			
	87.	United States Patent Application entitled "Methods of Having Laterally Grown Active Region and Methods of Fabricating Same," filed July 26, 2004 (Attorney Docket No. 5308-374).			
Ψ-	88.	United States Patent Application entitled, "Silicon Carbide on Diamond Substrates and Related Devices and Methods," (Cree Docket No. P0387).			

Examiner Signature	What Thong	Date Considered	4/5/2006